ABSTRACT

The invention discloses a three-dimensional array waveguide structure implemented with multi-layer process or monolithic integrated circuit process. The structure includes a first metal layer, a second metal layer and a dielectric layer. The dielectric layer lain between the first and the second metal layer is for isolating the first metal layer from the second metal layer. The first metal layer and the second metal layer respectively formed from a plurality of first unit cells and second unit cells arranged in rows and columns create the three-dimensional array waveguide structure. The first metal layer consists of a main body and a plurality of connecting arms, whereas the second metal layer consists of a metal wire loop. The second metal layer is located below the first metal layer, and each second unit cell corresponds to each first unit cell in a one-on-one manner to further build a complete unit cell. While the main body of each unit cell corresponds to an inductance element, the connecting arms of each unit cell linking the adjacent unit cells correspond to a capacitance element; therefore, a three-dimensional L-C array is formed.